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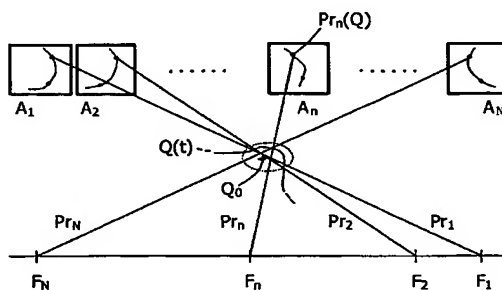
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(54) Title: THREE-DIMENSIONAL RECONSTRUCTION OF AN OBJECT FROM PROJECTION PHOTOGRAPHS



(57) Abstract: The invention relates to a method for the three-dimensional reconstruction of an object such as for example a stent (5) in the coronary vessels of a patient. In the course of this, a series of X-ray projection photographs (A_n) are produced from different directions, with the relevant ECG phase (E_n) being recorded simultaneously. On the projection photographs (A_n), the position of feature points (R, Q) is segmented (a). The photographs (A_n) are furthermore allocated (b) into classes (K_p) according to their belonging to different sections (E_p^{cl}) of the heartbeat phase. For each of these classes, the corresponding spatial position ($(x, y, z)_{Qp}$) of the feature points is established (e). In the next step (d), from the positions of the feature points (R, Q) that are now known for various heartbeat phases, the displacement vectors ($^{SR}_{p-m}$, $^{SQ}_{p-m}$) or generally the transformations (E_{p-m}) are calculated which link (d) the positions of the feature points for different heartbeat phases (p, m). With the aid of these transformations, in a last step (e) a three-dimensional reconstruction can then be carried out for the whole stent (5) or its surroundings, by referring back to all the X-ray projection photographs from different heartbeat phases (p_1, p_2). In an alternative embodiment of the invention, projection photographs of a moving body volume are transformed such that the images of feature points that are located on the photographs respectively come to rest at a place on which (randomly) set spatial reference positions for the feature points are projected. With the projection photographs that are thus aligned onto the reference positions, three-dimensional reconstruction of the object can subsequently take place.



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